

Chapter 4: Management Direction

This section presents long-term guidance (15-year plan) for the Refuge in the form of Refuge goals, objectives, and strategies. This section is organized into four broad areas:

- Habitat restoration and wildlife management
- Water management
- Community involvement
- Public use and demonstration



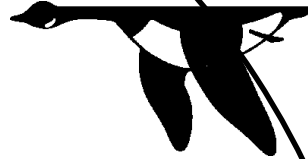
For the purpose of this analysis, Refuge goals are qualitative statements that define what the Refuge must be to satisfy its purpose, legal mandates, and the needs of citizens and agencies having a vital interest in what and how the Refuge performs. The objectives provide quantitative benchmarks that indicate progress toward the Refuge purpose and goals. Strategies are the specific actions and projects that will lead to the accomplishment of the management objectives.

The Refuge was donated to the U.S. Fish and Wildlife Service by the Richard King Mellon Foundation in 1992 to protect its valuable habitat and wildlife diversity, encourage waterfowl and other migratory bird production, provide wildlife-oriented recreation, and promote environmental education that is focused on demonstrating sound fish, wildlife, and agricultural practices. These purposes provide the basic framework for setting refuge goals, objectives, and strategies. Management functions, public uses, and facilities can be developed and provided only if they fall within the framework of and are compatible with the Refuge purpose. As such, a compatibility determination is the primary statutory standard determining which uses will be permitted on national wildlife refuge lands. All proposals in this plan are considered compatible based on a site-specific evaluation of the anticipated impacts (conflicts) on migratory bird use and habitat. See Appendix H for compatibility statements.

Habitat Restoration and Wildlife Management

Habitat restoration and wildlife management on the Refuge involves using a variety of management techniques to preserve, restore, and enhance the wetland, grassland, woodland, and other habitats for wildlife. Wetland management involves restoring drained wetlands and managing lake water levels to meet the

***Guiding
Principles of
Management
Rydell National
Wildlife Refuge***



Protect Wildlife

This includes all “hands-on” biological activities such as surveying and monitoring wildlife and habitat; relocating and reintroducing wildlife where appropriate; controlling populations of invasive destructive wildlife; preventing outbreaks of disease; responding to outbreaks when they occur; and preventing harmful population imbalances.

Improve Habitat

Improving habitat encompasses the full range of natural environmental management, from protection of pristine areas with little or no intervention in the natural process to intensive manipulation of soils, water, topography and vegetative cover. It includes restoration, enhancement, and management of wetlands, forests, grasslands, and other areas on the Refuge. Management strategies would include prescribed burning, wildlife-oriented farming, haying and grazing, control of invasive alien plants, and protection and monitoring of air and water quality.

Serve People

All of the educational and recreational activities that take place on the Refuge, as well as outreach ventures that occur elsewhere on behalf of the Refuge, relate to this guiding principle. Involving people includes all activities that are based upon contacts with people, such as the volunteer program and partnerships with organizations and individuals; law enforcement; Friends of the Refuge; and Refuge visitors. It also includes management of archeological and historical sites that are located on the Refuge.

seasonal needs of wildlife populations. Grassland management includes establishing and maintaining native prairie areas to provide nesting habitat for waterfowl and other ground nesting bird species. Woodland management involves restoring and enhancing large contiguous blocks of native tree and shrub species for the benefit of neotropical migratory birds, cavity nesting birds, and resident wildlife. Fragmentation has been shown to negatively affect certain wildlife species, for example, the veery and grasshopper sparrow, that require large, relatively continuous blocks of habitat. These species are considered habitat interior species, that is, they favor the interior of the forest (veery) or grassland (grasshopper sparrow) and mostly avoid edges. They are also considered to be area-sensitive, or area-dependent, requiring larger rather than smaller blocks of habitat to meet their breeding and post-breeding needs. As the Refuge implements these management principles, we expect a greater diversity of plant and animal species.



The Refuge contains 82 known wetland basins. Many of the basins have been drained or altered in the past. Of the original grasslands, 99 percent have been altered. Restoration of these wetland basins and grasslands will provide excellent waterfowl production. Throughout the Prairie Pothole Region of Minnesota, an estimated 90 percent of all wetlands and 99 percent of all tallgrass prairie habitat have been lost to development. Many wetland-dependent wildlife species, including waterfowl, have experienced significant long-term population declines due to the continued loss of wetland and grassland habitat in Minnesota, the Dakotas, and prairie Canada. Managing the Refuge wetlands and uplands for waterfowl production and maintenance will contribute toward the habitat and waterfowl production goals identified in the North American Waterfowl Management Plan.

1.0 Habitat Restoration and Wildlife Management Goal:

Restore, preserve and enhance the natural wildlife and plant species diversity within a refuge that is located in the transition zone between the northern tallgrass prairie and the northern hardwood deciduous forest. (See Figure 5, Planned Habitat Restoration and Management, and Table 1, Habitat Conversion.)

As we manage, restore and enhance habitat within the Refuge boundaries, we will evaluate inholdings and surrounding lands for suitable wildlife habitat. We will seek to protect these lands, if appropriate. If it is desirable to acquire the lands, the land will only be acquired from willing sellers.

- 1.1 Objective: Restore up to 300 acres (10 acres per year) of mesic deciduous forest with emphasis on expanding remnant stands for the benefit of forest interior bird species.

Strategies:

- 1.1.1 Develop a habitat management plan for the Refuge.
- 1.1.2 Plant native hardwoods and shrubs adjacent to existing woodlands, including planting tamarack trees around Tamarack Lake (to be specified in the Habitat Management Plan).
- 1.1.3 Phase out mature conifer plantations. Replace/interplant native hardwoods and shrubs into conifer plantations. Manage existing forest stands for native wildlife species.

Figure 5: Planned Habitat Restoration and Management

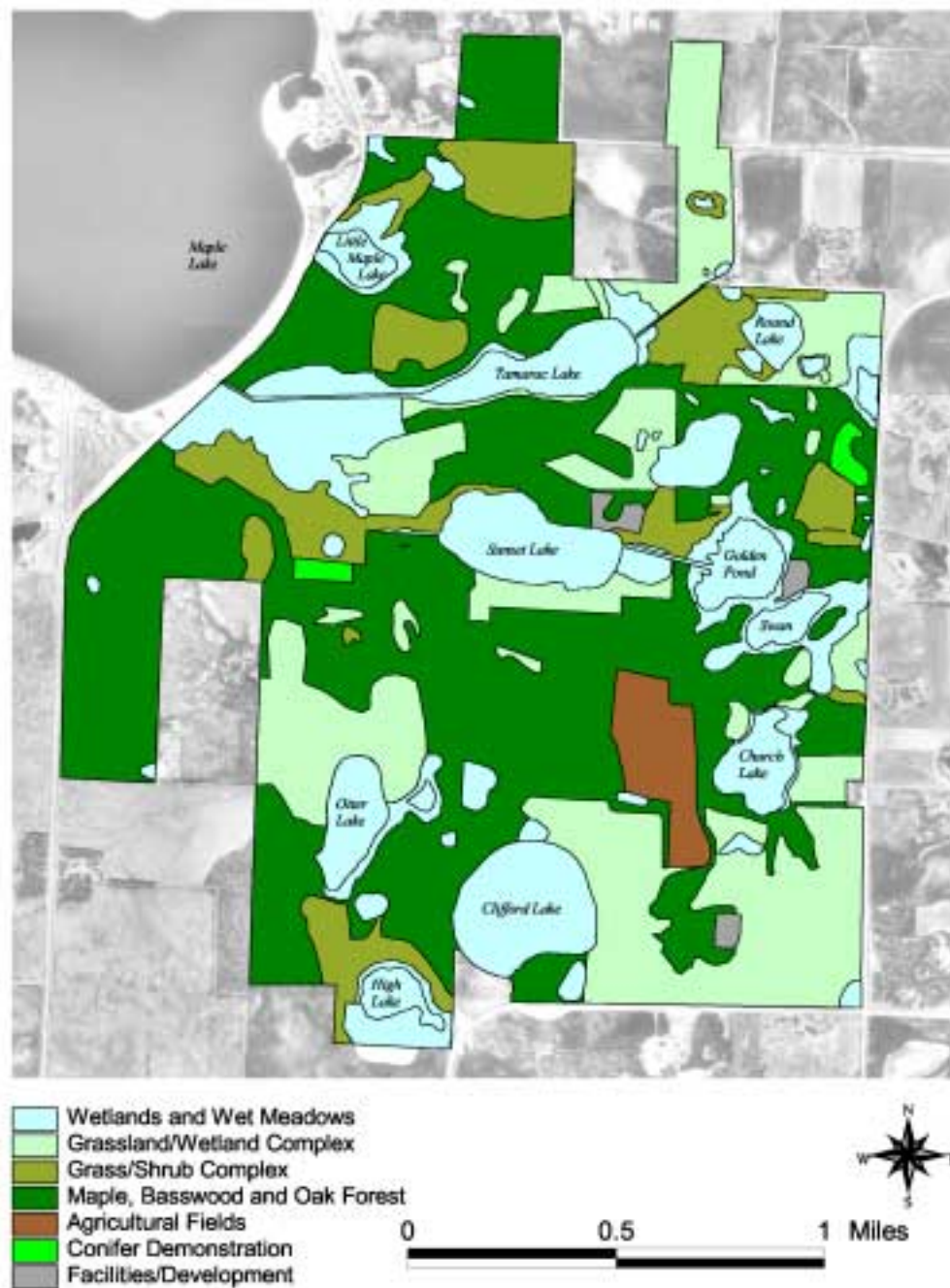


Table 1: Habitat Conversion

Current Habitat Acres	Planned Habitat Acres							
	Lakes	Wetlands and Wet Meadows	Grassland/Wetland Complex	Grass/Shrub Complex	Maple, Basswood and Oak Forest	Agricultural Fields	Conifer Demonstration	Facilities Development
Lakes	232							
Wetlands	338	188	39	28	88			
Hardwood	419	9	15	26	365			
Conifer Plantations	135	3	25	16	86		5	
Grass Meadows	489	12	220	88	163		4	
Cropland	272		115		116	42		
Facilities/Development	26							26
Grassland/Wetland Complex	85	24	11	33	17			
Grass/Shrub Complex	11	2	3		6			
Total Acres	2,007*	232	428	191	841	42	9	26

* Total acres do not equate total legal acreage (2,120) due to lack of precision of GIS at the scale digitized.

- 1.1.4 With partner groups, plant hardwood trees and shrubs. Groups might include the Boy Scouts of America, the Girl Scouts of America, 4-H clubs, Ruffed Grouse Society, Future Farmers of America (FFA) clubs, volunteers, conservation organizations, Friends of the Rydell Refuge, school groups, and garden clubs.
 - 1.1.5 Through the use of fire and other techniques, control invading brush species such as prickly ash and buckthorn in existing woodlands.
 - 1.1.6 In partnership with the University of Minnesota-Crookston, continue the forest health research on the Refuge woodlands.
 - 1.1.7 Clean up 12 abandoned building sites and convert to wildlife habitat. (98013)
- 1.2 Objective: Restore all of the drained seasonal wetlands by 2003, manage wetland water levels, and re-establish natural hydrologic patterns to benefit waterfowl, fish and other wildlife. (See Figure 6, Planned Water Management.)

Strategies:

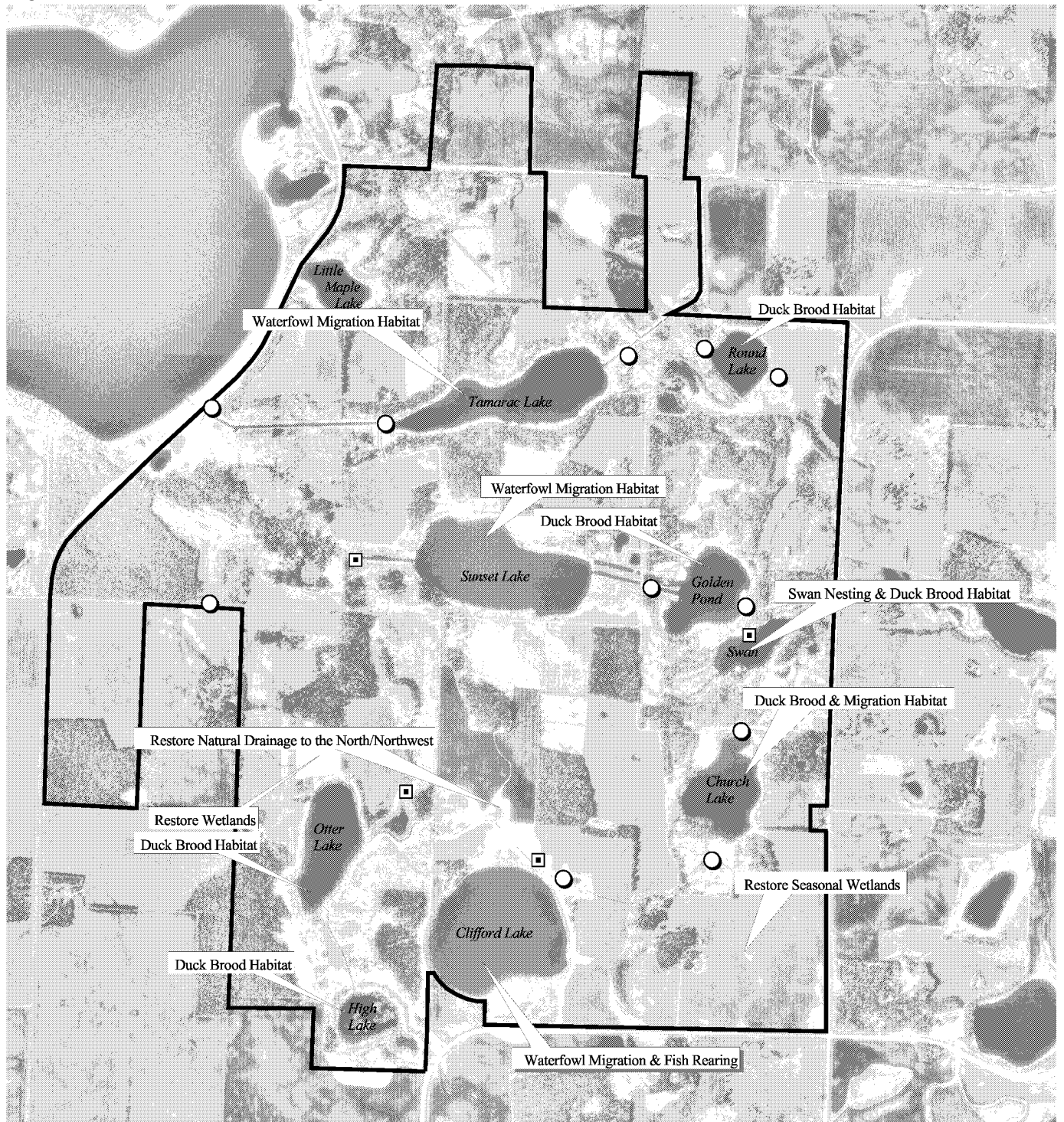
- 1.2.1 Restore drained wetlands to promote waterfowl production and enhance water quality. (00008)
- 1.2.2 Manage water levels in Sunset, Golden, Swan, and other lakes for waterfowl brood habitat. Manage the water level in Clifford Lake to mimic the natural hydrologic cycle.
- 1.2.3 Introduce wild rice and wild celery into Church, Otter, and High lakes.
- 1.2.4 Manage water levels in Swan Lake to provide trumpeter swan nesting habitat.
- 1.2.5. Remove minnows from Otter, High, and Church lakes to foster benthic production for the benefit of waterfowl. Construct fish barriers in drainage ditches leaving lakes to restrict minnow reintroduction into the wetlands. (99001)

- 1.3 Objective: Establish and maintain with fire 300 acres of native prairie grassland to benefit waterfowl, other migratory birds and resident wildlife.

Strategies:

- 1.3.1 Restore 20 to 50 acres of cropland into native prairie habitat per year. Seed with locally harvested native grasses and prairie forbs. The seeding mix should contain at least 50 native grass and forb species. Monitor restored prairie areas for wildlife use. (00017) (00005) (98006)
- 1.3.2 Enlist partners to assist with grassland establishment and maintenance, i.e. hand stripping forb and grass seeds, hand pulling exotic weeds, and broadcast seeding of new upland areas.
- 1.3.3 Develop prescription fire plans and a monitoring program for all burn units to facilitate site maintenance and seed production. Burn grassland units on at least a 4-year cycle for maintenance and a 1-year cycle for seed production.

Figure 6: Planned Water Management



- Water Control Structure
- Culvert
- ▭ Refuge Boundary

0 0.5 1 Miles



- 1.3.4 Construct a secure and heated chemical storage shed for chemicals needed in upland restoration work (98001)
 - 1.3.5 Limit the use of chemical sprays for controlling exotic weed species. Primarily use prescribed burning, mowing, and hand pulling to control weeds.
- 1.4 Objective: Using wildlife-compatible farming practices, farm approximately 40 acres of land with no-till farming practices to enhance wildlife viewing opportunities.

Strategies:

- 1.4.1 Work with University of Minnesota-Crookston to develop a farming program that is both farmer-friendly and that benefits wildlife. Employ a variety of techniques, including no-till/reduced-till/spring-till, buffer strips, contour, residual, and other conservation farming practices to demonstrate benefits for wildlife and provide enhanced opportunities for wildlife viewing. (00014)
- 1.5 Objective: Promote production of cavity nesting migratory bird species (wood duck, hooded merganser) by protecting all large tree snags and maintaining artificial nesting structures.

Strategies:

- 1.5.1 Produce wood ducks, hooded mergansers and bluebirds through natural and artificial nesting structures. Enlist partners to build and maintain wood ducks and bluebird nesting structures. (98009)
- 1.6 Objective: Rear walleye fingerlings to support restoration of native fish to tribal and refuge lands.

Discussion: We are concerned that using the lake for rearing walleye compromises invertebrate and plant production and thus wetland productivity for waterfowl and other migrant water birds. However, because walleye rearing has met the needs of DeSoto and other national wildlife refuges and various Native American tribes, we plan to continue the program while monitoring its effects. We will continue to evaluate the need for rearing walleye in support of restoration of native fish on tribal and refuge lands. If the need is filled, we will discontinue rearing fingerlings. In addition, beginning in the spring of 2001, we will investigate the possible negative impact on invertebrate production and natural wetland productivity in terms of waterfowl and other bird and wildlife use. Our intent is to have a complete assessment of impacts completed by 2004. We will continue rearing walleye until the monitoring shows a negative impact or the needs are met.

Strategies:

- 1.6.1 With partners, evaluate the need for rearing walleye fingerlings and the effects of rearing walleye on invertebrate production and waterfowl and other wildlife use.
- 1.7 Objective: Maintain the health and integrity of Sundew Bog.

Strategies:

- 1.7.1 Maintain the water level in the bog area.

- 1.7.2 Install an observation boardwalk to facilitate research activities and public education.

- 1.8 Objective: Determine the abundance and distribution of the Refuge's vascular plants and vertebrates by 2006.

Strategies:

- 1.8.1 Gather baseline biological data for the Refuge. (98010)
- 1.8.2 Develop Geographic Information System for the Refuge that includes biological and physical data. (00009)

- 1.9 Objective: Maintain summer white-tailed deer population at 25 to 30 deer per square mile.

Discussion: If we are to restore woodland habitats, we will need to manage the deer herd to keep it within the limits of the available resources. Deer herd populations can fluctuate significantly with changes in weather conditions, hunting pressure, and food availability. The deer herd can also be affected by the presence of large predators such as wolf, bear, and coyote. All of these factors must be evaluated when determining the appropriate harvest activities. The goal is to have no more than 60 breeding deer on the Refuge after the harvest.

Strategies:

- 1.9.1 Assess the current herd status each spring to determine harvest strategies for the fall.
- 1.9.2 Acquire necessary permits from the State of Minnesota to facilitate any needed harvest.
- 1.9.3 Promote hunts for youth and people with disabilities whenever possible. Allow limited archery and black powder hunts when needed to reduce the breeding population.

Potential Climate Change

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies under its direction that have land management responsibilities to consider potential climate change impacts as part of long range planning endeavors.

The escalation of carbon within the earth's atmosphere has been linked to the gradual increase in surface temperature commonly referred to as global warming. In relation to comprehensive conservation planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy's "*Carbon Sequestration Research and Development*" (U.S. DOE, 1999) defines carbon sequestration as "...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere."

The land is a tremendous force in carbon sequestration. Terrestrial biomes of all sorts - grasslands, forests, wetlands, tundra, perpetual ice and desert - are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric carbon monoxide. The Department of Energy report's

conclusions noted that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere.

Preserving natural habitat for wildlife is the heart of any long range plan for national wildlife refuges. The actions proposed in this comprehensive conservation plan would preserve or restore land and water, and would thus enhance carbon sequestration. This in turn contributes positively to efforts to mitigate human-induced global climate changes.

Water Quality Management

The quality of wetland habitat on the Refuge and in Maple Lake is largely determined by the farming practices within the Red Lake Watershed District. In cooperation and partnership with the Red Lake Watershed District and the Maple Lake Improvement Association, the Refuge will take an active role in addressing water quality issues that originate outside of the Refuge boundary. Most activities will be through partnerships with landowners in the watershed, farm and conservation organizations, and appropriate Federal, state, and county agencies.

Refuge staff will work with private landowners, conservation organizations, and governmental agencies to bring programs into the watershed to help meet the water quality goal. Special emphasis will be given to involving landowners along Polk County Ditch 73 in programs and practices such as filter strips, grass waterways, and wetland restoration. The purpose of the program is to reduce the amount of chemical-laden water that flows into the ditch. The program would be designed to give landowners voluntary opportunities to manage their land in a way that improves water quality and benefits wildlife.

This initiative recognizes that agriculture will always be a predominant land use within the watershed. However, it seeks to promote the concept that profitable, sustainable agriculture can be compatible with good water quality and with abundant and diverse wildlife populations.

2.0 Water Quality Management Goal:

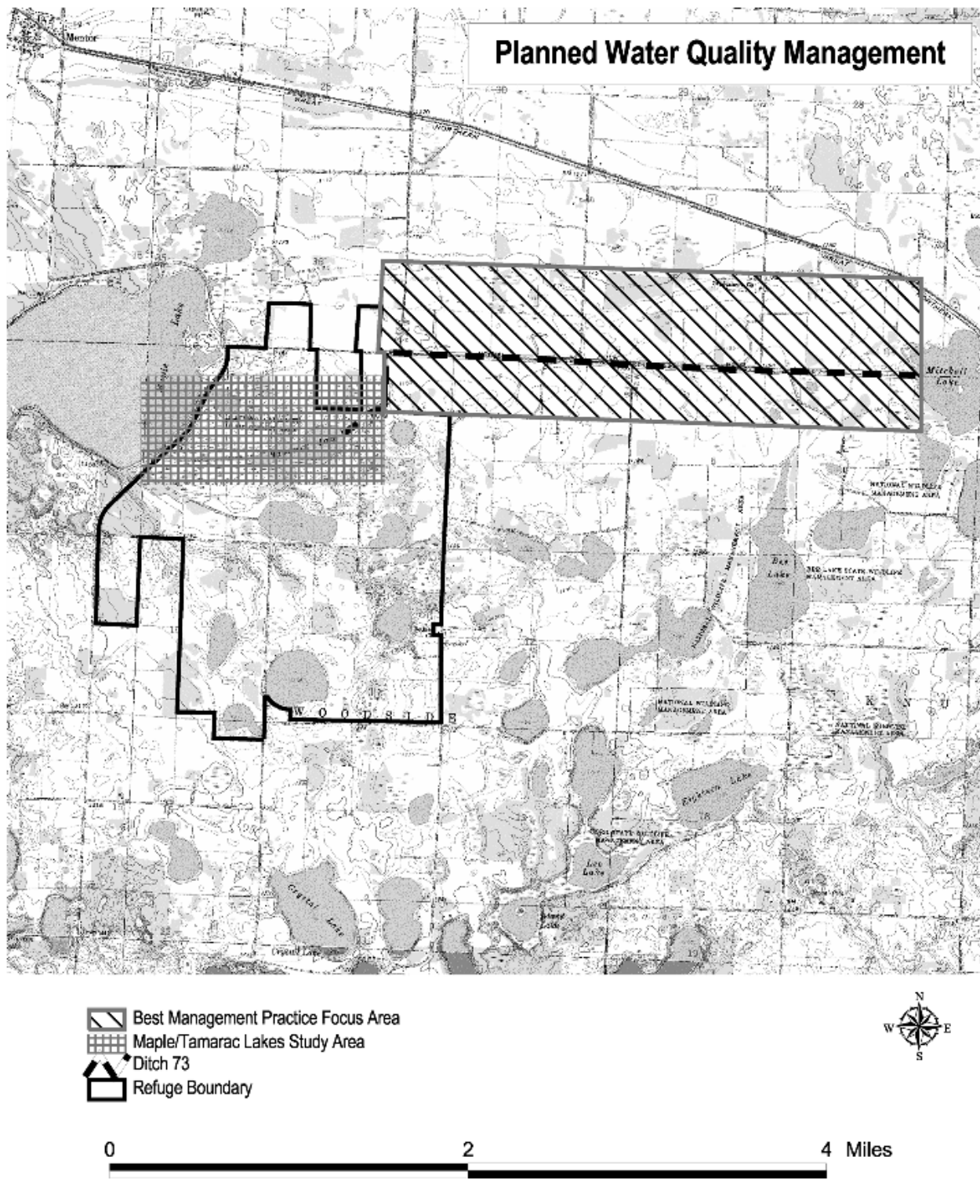
With watershed partners, improve and maintain water quality in Rydell National Wildlife Refuge lakes and wetlands and contribute to water quality improvements in Maple Lake. (See Figure 7, Planned Water Quality Management.)

- 2.1 Objective: Reduce and monitor the phosphorous and nitrate loads that enter the Refuge from Polk County Ditch 73.

Strategies:

- 2.1.1 Develop a detailed water quality management plan for the Refuge.
- 2.1.2 Working through the Partners for Fish and Wildlife Program, work with landowners along Ditch 73 to restore drained wetlands and establish grass waterways and buffer zones to slow down and filter the chemical-laden water that flows into the ditch. Establish partnerships with the Maple Lake Improvement Association and other organizations to help cover the costs.

Figure 7: Planned Water Quality Management



- 2.1.3 Develop a monitoring system that will effectively determine the nutrient levels that are flowing through and from the Refuge. (00007)
- 2.1.4 In partnership with the Maple Lake Improvement Association, study the feasibility of slowing down or rerouting the water that is flowing out of Tamarack Lake into Maple Lake. If feasible, develop a plan and secure partners to help complete the project.

Community Involvement

Since it was established in 1992, Rydell National Wildlife Refuge has enjoyed a great deal of public support from people and organizations in the surrounding communities. Community ownership in the Refuge has enabled it to function effectively in an era of budget shortages and minimal staff. Many of the activities presently occurring on the Refuge are only possible because of the large number of dedicated volunteers who are willing to invest their time and energy into the Refuge. Community involvement in Refuge programs will continue to be promoted and encouraged to build an ever increasing base of support. Refuge staff will recruit a cadre of volunteers from the surrounding communities. The volunteers will be trained, equipped, and enabled to become actively involved in many aspects of Refuge management.



The Refuge has formalized a partnership with the Friends of the Rydell Refuge Association. This association will assist the Refuge by seeking funding and providing assistance with the public use and educational programs. A variety of organizations, including the Agassiz Environmental Learning Center, Options Resource Center For Independent Living, the University of Minnesota-Crookston, the Fertile Conservation Club, the Minnesota Deer Hunters Association, the Ruffed Grouse Society and others, have been active in Refuge projects but have not formalized partnership agreements with the Refuge.

3.0 Community Involvement Goal:

Promote community stewardship of the Rydell National Wildlife Refuge through innovative citizen participation in Refuge operations.

- 3.1 Objective: Establish a self-managed volunteer program that is fully integrated in Refuge operations.

Strategies:

- 3.1.1 Develop a detailed community involvement plan for the Refuge.
 - 3.1.2 Establish a cost share approach with Friends of the Rydell Refuge to support a volunteer coordinator.
 - 3.1.3 Assist Friends of the Rydell Refuge with technical advice during the preparation of a business management plan.
- 3.2 Objective: Formalize an educational partnership with Agassiz Environmental Learning Center in Fertile, Minnesota.

Strategies:

3.2.1 Establish a partnership with the Agassiz Environmental Learning Center to develop and present educational programs, activities, and exhibits on the Refuge that promote awareness of wildlife and other natural resources.

3.3 Objective: Formalize an accessibility partnership with Options Resource Center for Independent Living, an East Grand Forks, Minnesota, organization.

Strategies:

3.3.1 Establish a partnership with Options Resource Center for Independent Living to offer hunting, recreation and education programs to special-needs populations.

3.4 Objective: Formalize a research partnership with the University of Minnesota-Crookston.

Strategies:

3.4.1 Establish a partnership with the University of Minnesota-Crookston to use Refuge facilities and environments for off-campus training and, in return, provide continuing research and monitoring of Refuge natural resources.

Public Use

Rydell National Wildlife Refuge currently provides wildlife-oriented recreational opportunities including bird watching, wildlife observation, photography, environmental education, nature programs, deer hunting, hiking and cross country skiing. The Refuge also allows natural resources research activities. Visitation surpassed 5,000 visits in 2000. Maintenance of facilities is largely supported by dedicated volunteers.



Six priority visitor uses are planned for the Rydell National Wildlife Refuge - wildlife observation, photography, environmental education, interpretation, fishing, and hunting. These activities are encouraged within the U.S. Fish & Wildlife Service Refuge System when such activities are compatible with Refuge purposes.

Activities and facilities have been located to minimize conflicts with wildlife and to provide opportunities for solitude and wildlife observation. Approximately 3.5 miles of existing roads and 7 miles of existing trails have been identified for

visitor use. These will need to be upgraded so that they are fully accessible and able to withstand increased use. Other roads and trails within the Refuge will be closed to the public and used for maintenance access. Visitor activities will be concentrated in the north central and east central portions of the Refuge, leaving much of the south and west parts of the refuge to function as wildlife sanctuary.

Programs for visitors will promote the enjoyment of the outdoors and a greater understanding and appreciation for fish and wildlife, wildlands ecology, and wildlife management. Specific planning, implementing, and evaluating of the Refuge's public use program will be guided by a step-down Public Use Plan that will be developed following the Comprehensive Conservation Plan. All public use activities must meet the compatibility criteria established for national wildlife refuges before they will be permitted on the Refuge. Activities, uses, and facilities will be phased in over the 15-year time frame as funding and staff become available.

4.0 Public Use Goal:

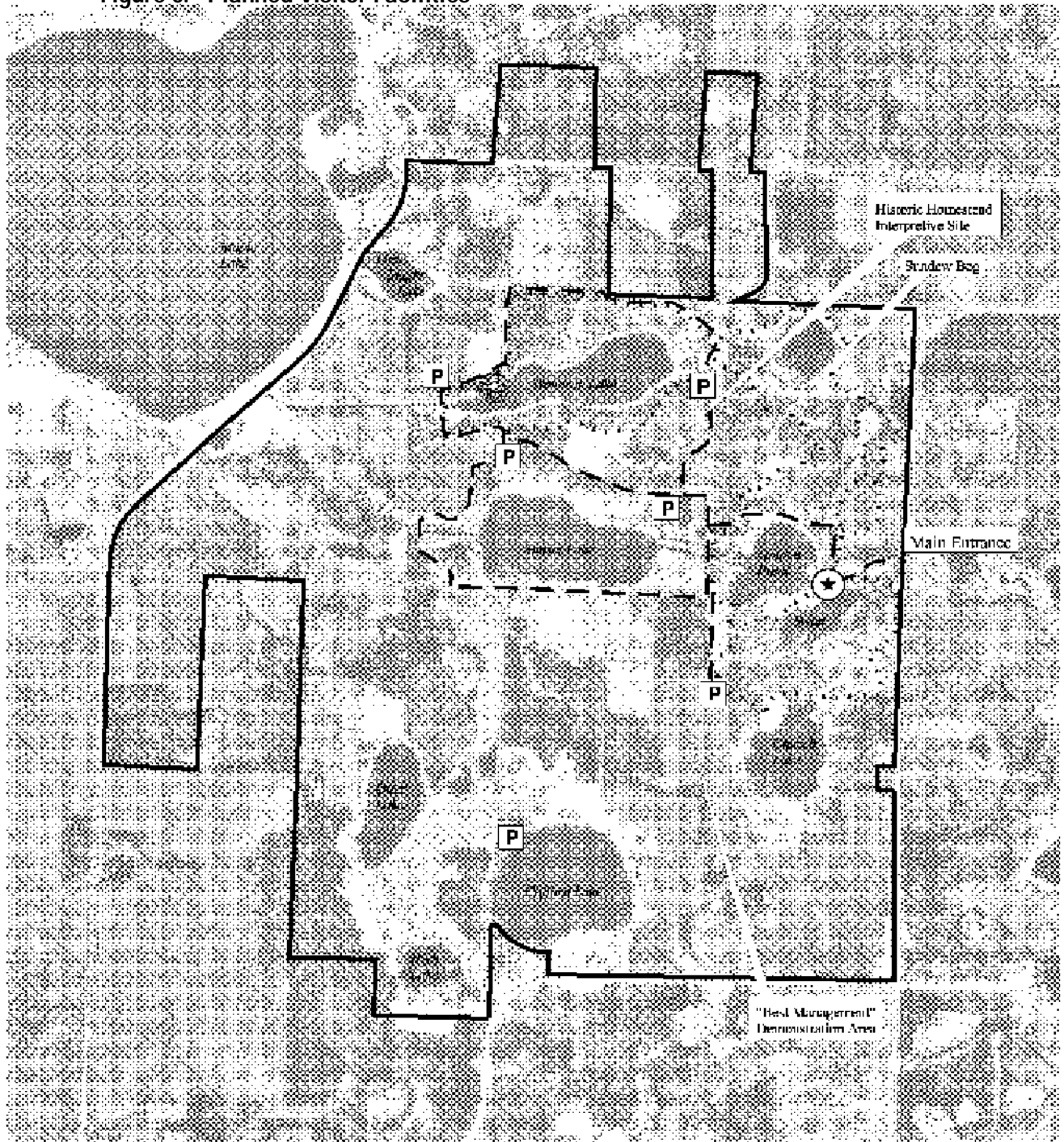
Provide fully accessible wildlife-dependent recreational opportunities that educate and demonstrate wildlife and habitat stewardship. (See Figure 8, Planned Visitor Facilities.)

- 4.1 Objective: Meet the needs of 5,000 to 7,000 people per year by improving programs, facilities, and information.

Strategies:

- 4.1.1 Develop a detailed Public Use Plan that includes appropriate signing, informational brochures, Visitor Center displays, and other information needed to enable visitors to have an educational and enjoyable experience while on the Refuge. (98007) (00002) (98008) (00016)
 - 4.1.2 In partnership with the Friends of the Rydell Refuge, staff the Visitor Center to the extent that the Refuge can be open to the public 6 days per week with an emphasis on evening hours.
 - 4.1.3 In partnership with Options Resource Center for Independent Living and Friends of the Rydell Refuge, make the Visitor Center and headquarters office building and observation decks fully accessible. (00010)
- 4.2 Objective: Provide visitors with opportunities for wildlife observation, environmental education, interpretation, photography and deer hunting with a strong emphasis on making these activities and facilities fully accessible.
- ##### *Strategies:*
- 4.2.1 With partners, plan and host two annual "Open House" events at the Refuge. Invite visitors to hike, ski, observe wildlife, tour the Refuge, and learn about the cultural history of the Refuge.
 - 4.2.2 With partners and volunteers, provide deer and waterfowl hunting opportunities for youth and disabled hunters; participate in the Conservation Youth Tours; and present one environmental education workshop each year for local school teachers.
 - 4.2.3 As part of the restoration of Sundew Bog, construct a board walk over the bog to provide access for educational programs. (00010)
- 4.3 Objective: Establish and maintain a 3.5-mile self-guided interpretive auto tour route for wildlife observation, interpretation and demonstration. Demonstrate effective fish and wildlife management, and soil and water stewardship along the auto tour route.

Figure 8: Planned Visitor Facilities



- ⊙ Refuge Headquarters
- Ⓟ Parking Area (mostly seasonal)
- ⦿ Fishing Pier
- Hike and Ski Trails
- ... Auto Tour Route
- ▭ Refuge Boundary



0 0.5 1 Miles

Strategies:

- 4.3.1 In partnership with the Polk County Historical Society and the Friends of the Rydell Refuge, identify two or three culturally significant sites to interpret and to enhance visitors' appreciation for the Refuge's cultural history. (00016)
- 4.3.2 Upgrade the auto tour route so it will be accessible by cars and buses during the spring, summer, and fall months. Include two fully accessible wildlife observation structures at strategic locations along the route. Each observation site will need a parking lot that is large enough to accommodate buses. (00004)
- 4.4 Objective: Establish and maintain a 7-mile network of accessible trails for wildlife observation, interpretation, and recreational enjoyment.

Strategies:

- 4.4.1 Develop exhibits and interpretive information for all trails and fishing piers. (00001)
- 4.5 Objective: Provide high quality fishing opportunities in Tamarack Lake.

Strategies:

- 4.5.1 Complete a fishing plan and amend refuge-specific regulations to allow fishing on the Refuge.
- 4.5.2 Complete a fishing pier and access at Tamarack Lake.
- 4.6 Objective: Promote the "Watchable Wildlife" program and provide accessible facilities for viewing wildlife on the Refuge.

Strategies:

- 4.6.1 Promote the Refuge as a "Watchable Wildlife" destination. With partner organizations, conduct one watchable wildlife skills workshop per year to educate Refuge visitors on species identification, habitat recognition and wildlife observation skills. Also develop a system of signs, brochures, wildlife identification materials and equipment to provide visitors with enhanced ability to see wildlife.



5.0 Protection Goal:

To protect the biological and cultural integrity of Refuge resources and the health and safety of visitors and Refuge staff.

- 5.1 Objective: A safe and sanitary environment for visitors and staff.

Strategies:

- 5.1.1 Construct restroom facilities at the visitor center.
- 5.1.2 Construct a fuel and chemical storage building.
- 5.2 Objective: On the average, provide 8 hours per week of field law enforcement.

Strategies:

- 5.2.1 Hire a resource specialist with law enforcement authority. (00006)

- 5.3 Objective: Eliminate known electrical line hazard to waterfowl and other birds.

Strategy:

- 5.3.1 Remove and relocate electrical power lines underground. (00012)

- 5.4 Objective: Staff and operate the Refuge to achieve minimum standards of protection to the resource and service to the public.

Strategies:

- 5.4.1 Provide basic facilities and maintenance for the Refuge. (00011)

- 5.4.2 Provide basic office equipment and administrative support for the staff. (00003)(98012)

- 5.5 Objective: Fulfill requirements of Section 14 of the Archaeological Resources Protection Act and Section 110 (a) (2) of the National Historic Preservation Act.

Strategy:

- 5.5.1 Establish a plan that will meet the requirements of the Archaeological Resources Protection Act for surveying lands to identify archaeological resources and the National Historic Preservation Act for a preservation program.